NiceZyme View of ENZYME: EC 6.3.1.2

Official Name	
Glutamate--ammonia ligase.	
Alternative Name(s)	
Glutamine synthetase.	
Reaction catalysed	
ATP + L-glutamate + NH(3) <=> ADP + phosphate + L-glutamine	
Comment(s)	
Also acts, more slowly, on 4-methylene-L-glutamate (cf. EC 6.3.1.7).	
Cross-references	
Biochemical Pathways; map number(s)	G7
PROSITE	PDOC00162
BRENDA	6.3.1.2
PUMA2	6.3.1.2
PRIAM enzyme-specific profiles	6.3.1.2
Kyoto University LIGAND chemical database	6.3.1.2
IUBMB Enzyme Nomenclature	6.3.1.2
IntEnz	6.3.1.2
MEDLINE	Find literature relating to 6.3.1.2
MetaCyc	6.3.1.2
	Q56WN1, GLN11_ARATH; P14656, GLN11_ORYSA; Q8LCE1, GLN12_ARATH; P14654, GLN12_ORYSA; Q9LVI8, GLN13_ARATH; Q4W8D0, GLN13_ORYSA; Q9FMD9, GLN14_ARATH; Q8GXW5, GLN15_ARATH; O04867, GLNA1_ALNGL; P05457, GLNA1_BRAJA; Q42688, GLNA1_CHLRE; O22504, GLNA1_DAUCA; P20477, GLNA1_DROME; P46033, GLNA1_FRAAL; Q42899, GLNA1_LOTJA; P38559, GLNA1_MAIZE; P04078, GLNA1_MEDSA; P0A591, GLNA1_MYCBO; P0A590, GLNA1_MYCTU; P08282, GLNA1_PEA; P04770, GLNA1_PHAVU; P09826, GLNA1_RHILV; Q59747, GLNA1_RHIME; P24099, GLNA1_SOYBN; P77958, GLNA1_STRFL; Q05542, GLNA1_STRVR; P51118, GLNA1_VITVI; Q43127, GLNA2_ARATH; P04772, GLNA2_BRAJA; Q42689, GLNA2_CHLRE; O22506, GLNA2_DAUCA; P20478, GLNA2_DROME; P81643, GLNA2_EMIHU; P20805, GLNA2_FRAAL; P13564, GLNA2_HORVU; P38560, GLNA2_MAIZE; Q9XQ94, GLNA2_MEDSA; P64246, GLNA2_MYCBO; P64245, GLNA2_MYCTU; P14655, GLNA2_ORYSA; P08281, GLNA2_PEA; P04771, GLNA2_PHAVU; P81107, GLNA2_PINPS; Q02154, GLNA2_RHILP; P45626, GLNA2_RHIME; O82560, GLNA2_SOYBN; P22878, GLNA2_STRHY; P19432, GLNA2_STRVR; P51119, GLNA2_VITVI; Q06378, GLNA3_HORVU; P14636, GLNA3_LUPAN; P38561, GLNA3_MAIZE; Q43785, GLNA3_MEDSA; P07694, GLNA3_PEA; P00965, GLNA3_PHAVU; P31592, GLNA3_RHILP; O87393, GLNA3_RHIME;

UniProtKB/Swiss-Prot	P38562, GLNA4_MAIZE;	Q43066, GLNA4_PEA;	P15102, GLNA4_PHAVU;
	P38563, GLNA5_MAIZE;	Q42624, GLNAC_BRANA;	P25462, GLNAC_MAIZE;
	Q9QY94, GLNA_ACOCA;	O00088, GLNA_AGABI;	Q8X169, GLNA_AMAMU;
	P00964, GLNA_ANASP;	O66514, GLNA_AQUAE;	O29313, GLNA_ARCFU;
	Q75BT9, GLNA_ASHGO;	P10583, GLNA_AZOBR;	P94126, GLNA_AZOCA;
	P22248, GLNA_AZOVI;	P19064, GLNA_BACCE;	P15623, GLNA_BACFR;
	P12425, GLNA_BACSU;	P15103, GLNA_BOVIN;	Q05650, GLNA_BUTFI;
	P34497, GLNA_CAEEL;	Q8HZM5, GLNA_CANFA;	Q6FMT6, GLNA_CANGA;
	P16580, GLNA_CHICK;	P10656, GLNA_CLOSA;	Q12613, GLNA_COLGL;
	P04773, GLNA_CRIGR;	Q96UG9, GLNA_CRYNE;	Q6B4U7, GLNA_DEBHA;
	P11600, GLNA_DUNSA;	P0A9C7, GLNA_ECO57;	P0A9C6, GLNA_ECOL6;
	P0A9C5, GLNA_ECOLI;	Q96V52, GLNA_EMENI;	P33035, GLNA_FREDI;
	Q9UUN6, GLNA_FUSSH;	Q9C2U9, GLNA_GIBFU;	P43794, GLNA_HAEIN;
	Q9HNI2, GLNA_HALSA;	P43386, GLNA_HALVO;	Q96UV5, GLNA_HEBCY;
	Q9ZLW5, GLNA_HELPJ;	P94845, GLNA_HELPY;	P15104, GLNA_HUMAN;
	Q874T6, GLNA_KLULA;	P45627, GLNA_LACDE;	Q9CDL9, GLNA_LACLA;
	P23712, GLNA_LACSA;	P52782, GLNA_LUPLU;	Q4R7U3, GLNA_MACFA;
	P15124, GLNA_METCA;	Q60182, GLNA_METJA;	O59648, GLNA_METMP;
	O27612, GLNA_METTH;	P21154, GLNA_METVO;	P15105, GLNA_MOUSE;
	P25821, GLNA_NEIGO;	Q86ZF9, GLNA_NEUCR;	P12424, GLNA_NICPL;
	Q04831, GLNA_PANAR;	Q9CLP2, GLNA_PASMU;	P20479, GLNA_PHOLP;
	P46410, GLNA_PIG;	P52783, GLNA_PINSY;	P28786, GLNA_PROVU;
	Q9HU65, GLNA_PSEAE;	Q9UY99, GLNA_PYRAB;	Q05907, GLNA_PYRFU;
	O58097, GLNA_PYRHO;	O08467, GLNA_PYRKO;	P36687, GLNA_PYRWO;
	P09606, GLNA_RAT;	P13499, GLNA_RHOCA;	P43518, GLNA_RHOSH;
	P0A1P7, GLNA_SALTI;	P0A1P6, GLNA_SALTY;	Q09179, GLNA_SCHPO;
	P0A9C8, GLNA_SHIFL;	P41320, GLNA_SQUAC;	Q5HGC3, GLNA_STAAC;
	P60890, GLNA_STAAM;	P99095, GLNA_STAAN;	Q6GHC6, GLNA_STAAR;
	Q6G9Q4, GLNA_STAAS;	P0A040, GLNA_STAAU;	P0A039, GLNA_STAAW;
	Q5HPN2, GLNA_STAEQ;	Q8CSR8, GLNA_STAES;	P15106, GLNA_STRCO;
	Q8J1R3, GLNA_SUIBO;	Q9HH09, GLNA_SULAC;	P23794, GLNA_SULSO;
	P28605, GLNA_SYNP2;	P77961, GLNA_SYNY3;	P36205, GLNA_THEMA;
	P07804, GLNA_THIFE;	P51120, GLNA_TRITH;	Q86ZU6, GLNA_TUBBO;
	P19904, GLNA_VIBAL;	Q9KNJ2, GLNA_VIBCH;	P32289, GLNA_VIGAC;
	P51121, GLNA_XENLA;	Q6C3E0, GLNA_YARLI;	P32288, GLNA_YEAST;

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NiceZyme View of ENZYME: EC 3.5.1.2

Official Name	
Glutaminase.	
Alternative Name(s)	
L-glutamine amidohydrolase.	
Reaction catalysed	
L-glutamine + H(2)O <=> L-glutamate + NH(3)	
Cross-references	
Biochemical Pathways; map number(s)	G7
PROSITE	PDOC00132
BRENDA	3.5.1.2
PUMA2	3.5.1.2
PRIAM enzyme-specific profiles	3.5.1.2
Kyoto University LIGAND chemical database	3.5.1.2
IUBMB Enzyme Nomenclature	3.5.1.2
IntEnz	3.5.1.2
MEDLINE	Find literature relating to 3.5.1.2
MetaCyc	3.5.1.2
UniProtKB/Swiss-Prot	Q19013, GLS1_CAEEL; Q93650, GLS2_CAEEL; Q81YY0, GLSA1_BACAN; Q81IB3, GLSA1_BACCR; Q9K9L8, GLSA1_BACHD; O31465, GLSA1_BACSU; Q89NA7, GLSA1_BRAJA; Q8XMU7, GLSA1_CLOPE; Q8XD23, GLSA1_ECO57; Q8FK76, GLSA1_ECOL6; P77454, GLSA1_ECOLI; Q83SE1, GLSA1_SHIFL; Q8ZHF1, GLSA1_YERPE; Q81NN0, GLSA2_BACAN; Q81BN7, GLSA2_BACCR; Q9K9D1, GLSA2_BACHD; O07637, GLSA2_BACSU; Q89KV2, GLSA2_BRAJA; Q8XIW8, GLSA2_CLOPE; P0A6W2, GLSA2_ECO57; P0A6W1, GLSA2_ECOL6; P0A6W0, GLSA2_ECOLI; Q83RE2, GLSA2_SHIFL; Q9ZC49, GLSA2_YERPE; Q8UEA1, GLSA_AGRT5; Q8YSZ5, GLSA_ANASP; Q8A4M8, GLSA_BACTN; Q8FWV5, GLSA_BRUSU; Q9ABF2, GLSA_CAUCR; Q7NQH9, GLSA_CHRVO; Q898A3, GLSA_CLOTE; Q8FMX4, GLSA_COREF; Q8NMT3, GLSA_CORGL; Q8RDV3, GLSA_FUSNN; Q8CV87, GLSA_OCEIH; Q7N7H7, GLSA_PHOLL; Q9I387, GLSA_PSEAE; Q882Y4, GLSA_PSESM; Q8XQS6, GLSA_RALSO; O87405, GLSA_RHIEC; Q98NB7, GLSA_RHILO; Q92PH0, GLSA_RHIME; Q8ZPI2, GLSA_SALTY; Q8EBY0, GLSA_SHEON; Q82NI9, GLSA_STRAW; P57755, GLSA_STRCO; P73903, GLSA_SYNY3; Q9KUR1, GLSA_VIBCH; Q87LI9, GLSA_VIBPA; Q8DCC2, GLSA_VIBVU; Q7MHI7, GLSA_VIBVY; O94925, GLSK_HUMAN; P13264, GLSK_RAT; Q9UI32, GLSL_HUMAN; Q571F8, GLSL_MOUSE; P28492, GLSL_RAT;

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☐	L4	l1 and (method$ or synthes$4 or product$4)	102
☐	L3	l1 and (nakamura or akiyama).in.	3
☐	L2	l1 and (nakamura or akiyama)in.	17
☐	L1	glutaminas$4 same glutamine$4 same (synthetas$4 or synthas$4)	102

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     INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, ANTE, AQUALINE,
     AQUASCI, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CAPLUS,
     CEABA-VTB, CIN, CONFSCI, CROPB, CROPU, DDFB, DDFU, DGENE, DISSABS, DRUGB,
     DRUGMONOG2, DRUGU, EMBAL, EMBASE, ...' ENTERED AT 16:32:16 ON 28 AUG 2006
                SEA GLUTAMINAS? AND GLUTAMINE?
                ---------
                  1   FILE ADISINSIGHT
                 59   FILE AGRICOLA
                 31   FILE ANABSTR
                  2   FILE ANTE
                  1   FILE AQUALINE
                 26   FILE AQUASCI
                 76   FILE BIOENG
               1287   FILE BIOSIS
                 87   FILE BIOTECHABS
                 87   FILE BIOTECHDS
                271   FILE BIOTECHNO
                163   FILE CABA
               1641   FILE CAPLUS
                 31   FILE CEABA-VTB
                  1   FILE CIN
                  8   FILE CONFSCI
                  6   FILE CROPU
                 78   FILE DDFB
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                177   FILE DGENE
                 84   FILE DISSABS
                 78   FILE DRUGB
                 69   FILE DRUGU
                  3   FILE EMBAL
                904   FILE EMBASE
                298   FILE ESBIOBASE
                  1   FILE FOREGE
                 24   FILE FROSTI
                 47   FILE FSTA
                187   FILE GENBANK
                 30   FILE IFIPAT
                  1   FILE IMSDRUGNEWS
                  1   FILE IMSRESEARCH
                 41   FILE JICST-EPLUS
                270   FILE LIFESCI
               1133   FILE MEDLINE
                  5   FILE NTIS
                  7   FILE OCEAN
                370   FILE PASCAL
                  1   FILE PHIN
                  7   FILE PROMT
                  2   FILE RDISCLOSURE
                628   FILE SCISEARCH
                541   FILE TOXCENTER
                301   FILE USPATFULL
                 31   FILE USPAT2
                  4   FILE WATER
                 69   FILE WPIDS
                 69   FILE WPINDEX
                  6   FILE IPA
                  1   FILE NAPRALERT
                  2   FILE NLDB
L1                QUE GLUTAMINAS? AND GLUTAMINE?
                ---------
                D RANK

     FILE 'CAPLUS, BIOSIS, MEDLINE, EMBASE, SCISEARCH, TOXCENTER, PASCAL,
     USPATFULL, ESBIOBASE, BIOTECHNO, LIFESCI' ENTERED AT 16:33:51 ON 28 AUG
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2006

L2 1535 SEA GLUTAMINAS? AND GLUTAMINE? AND (CORYNEFOR? OR GLUTAMICUM? OR COLI? OR BACTER? OR BREVIBACT?)

L3 1174 SEA L2 AND (METHOD? OR PRODUCT? OR SYNTHE?)

L4 342 SEA GLUTAMINAS?(S)(GLUTAMINE?)(S)(CORYNEFOR? OR GLUTAMICUM? OR COLI? OR BACTER? OR BREVIBACT?)

L5 211 SEA L4(S)(METHOD? OR SYNTHE? OR PRODUCT?)

L6 122 DUP REM L5 (89 DUPLICATES REMOVED)

D TI L6 1-122

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 NEWS  6  MAY 11    KOREAPAT updates resume
 NEWS  7  MAY 19    Derwent World Patents Index to be reloaded and enhanced
 NEWS  8  MAY 30    IPC 8 Rolled-up Core codes added to CA/CAplus and
                    USPATFULL/USPAT2
 NEWS  9  MAY 30    The F-Term thesaurus is now available in CA/CAplus
 NEWS 10  JUN 02    The first reclassification of IPC codes now complete in
                    INPADOC
 NEWS 11  JUN 26    TULSA/TULSA2 reloaded and enhanced with new search and
                    and display fields
 NEWS 12  JUN 28    Price changes in full-text patent databases EPFULL and PCTFULL
 NEWS 13  JUl 11    CHEMSAFE reloaded and enhanced
 NEWS 14  JUl 14    FSTA enhanced with Japanese patents
 NEWS 15  JUl 19    Coverage of Research Disclosure reinstated in DWPI
 NEWS 16  AUG 09    INSPEC enhanced with 1898-1968 archive
 NEWS 17  AUG 28    ADISCTI Reloaded and Enhanced

 NEWS EXPRESS  JUNE 30 CURRENT WINDOWS VERSION IS V8.01b, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
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INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, ANTE, AQUALINE,
      AQUASCI, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CAPLUS,
      CEABA-VTB, CIN, CONFSCI, CROPB, CROPU, DDFB, DDFU, DGENE, DISSABS, DRUGB,
      DRUGMONOG2, DRUGU, EMBAL, EMBASE, ...' ENTERED AT 16:32:16 ON 28 AUG 2006

71 FILES IN THE FILE LIST IN STNINDEX

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          1   FILE ADISINSIGHT
         59   FILE AGRICOLA
         31   FILE ANABSTR
          2   FILE ANTE
          1   FILE AQUALINE
         26   FILE AQUASCI
         76   FILE BIOENG
       1287   FILE BIOSIS
         87   FILE BIOTECHABS
         87   FILE BIOTECHDS
        271   FILE BIOTECHNO
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        904   FILE EMBASE
        298   FILE ESBIOBASE
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         47   FILE FSTA
        187   FILE GENBANK
         30   FILE IFIPAT
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         41   FILE JICST-EPLUS
  42 FILES SEARCHED...
        270   FILE LIFESCI
       1133   FILE MEDLINE
          5   FILE NTIS
          7   FILE OCEAN
        370   FILE PASCAL
          1   FILE PHIN
          7   FILE PROMT
          2   FILE RDISCLOSURE
        628   FILE SCISEARCH
        541   FILE TOXCENTER
        301   FILE USPATFULL
         31   FILE USPAT2
          4   FILE WATER
         69   FILE WPIDS
         69   FILE WPINDEX
          6   FILE IPA
          1   FILE NAPRALERT
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52 FILES HAVE ONE OR MORE ANSWERS,   71 FILES SEARCHED IN STNINDEX

L1    QUE GLUTAMINAS? AND GLUTAMINE?

=> d rank
F1          1641    CAPLUS
F2          1287    BIOSIS
F3          1133    MEDLINE
F4           904    EMBASE
F5           628    SCISEARCH
F6           541    TOXCENTER
F7           370    PASCAL
F8           301    USPATFULL
F9           298    ESBIOBASE
F10          271    BIOTECHNO
F11          270    LIFESCI
F12          187    GENBANK
F13          177    DGENE
F14          163    CABA
F15           87    BIOTECHABS
F16           87    BIOTECHDS
F17           84    DISSABS
F18           78    DDFB
F19           78    DRUGB
F20           76    BIOENG
F21           69    DRUGU
F22           69    WPIDS
F23           69    WPINDEX
F24           59    AGRICOLA
F25           49    DDFU
F26           47    FSTA
F27           41    JICST-EPLUS
F28           31    ANABSTR
F29           31    CEABA-VTB
F30           31    USPAT2
F31           30    IFIPAT
F32           26    AQUASCI
F33           24    FROSTI
F34            8    CONFSCI
F35            7    OCEAN
F36            7    PROMT
F37            6    CROPU
F38            6    IPA
F39            5    NTIS
F40            4    WATER
F41            3    EMBAL
F42            2    ANTE
F43            2    RDISCLOSURE
F44            2    NLDB
F45            1    ADISINSIGHT
F46            1    AQUALINE
F47            1    CIN
F48            1    FOREGE
F49            1    IMSDRUGNEWS
F50            1    IMSRESEARCH
F51            1    PHIN
F52            1    NAPRALERT

=> file f1-f11
COST IN U.S. DOLLARS                               SINCE FILE      TOTAL
                                                        ENTRY    SESSION
FULL ESTIMATED COST                                      1.83       2.04

FILE 'CAPLUS' ENTERED AT 16:33:51 ON 28 AUG 2006
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=> s glutaminas? and glutamine? and (corynefor? or glutamicum? or coli? or bacter?
or brevibact?)
   9 FILES SEARCHED...
L2         1535 GLUTAMINAS? AND GLUTAMINE? AND (CORYNEFOR? OR GLUTAMICUM? OR
                COLI? OR BACTER? OR BREVIBACT?)

=> s l2 and (method? or product? or synthe?)
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L3         1174 L2 AND (METHOD? OR PRODUCT? OR SYNTHE?)

=> s glutaminas?(s)(glutamine?)(s)(corynefor? or glutamicum? or coli? or bacter? or
brevibact?)
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L4          342 GLUTAMINAS?(S)(GLUTAMINE?)(S)(CORYNEFOR? OR GLUTAMICUM? OR COLI?
                 OR BACTER? OR BREVIBACT?)

=> s l4(s)(method? or synthe? or product?)
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L5          211 L4(S)(METHOD? OR SYNTHE? OR PRODUCT?)

=> dup rem l5
PROCESSING COMPLETED FOR L5
L6           122 DUP REM L5 (89 DUPLICATES REMOVED)

=> d ti l6 1-122

L6   ANSWER 1 OF 122  USPATFULL on STN
TI     Active carbohydrate containing protecting reagents for chemical
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modifications, their production and use

L6 ANSWER 2 OF 122 USPATFULL on STN
TI Process for producing theanine

L6 ANSWER 3 OF 122 USPATFULL on STN
TI Use of phosphoketolase for producing useful metabolites

L6 ANSWER 4 OF 122 USPATFULL on STN
TI Utilization of wolinella succinogenes asparaginase to treat diseases associated with asparagine dependence

L6 ANSWER 5 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI Vitamin B6 biosynthesis by the malaria parasite Plasmodium falciparum: Biochemical and structural insights

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TI Ammonia channel couples glutaminase with transamidase reactions in GatCAB

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TI Folate synthesis in plants: Purification, kinetic properties, and inhibition of aminodeoxychorismate synthase

L6 ANSWER 8 OF 122 USPATFULL on STN
TI Corynebacterium glutamicum genes encoding metabolic pathway proteins

L6 ANSWER 9 OF 122 USPATFULL on STN
TI Flea head, nerve cord, hindgut and malpighian tubule nucleic acid molecules, proteins and uses thereof

L6 ANSWER 10 OF 122 USPATFULL on STN
TI Nucleic acid and amino acid sequences relating to streptococcus pneumoniae for diagnostics and therapeutics

L6 ANSWER 11 OF 122 USPATFULL on STN
TI Molecular control of transgene segregation and its escape by a recoverable block of function (RBF) system

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TI On the two components of pyridoxal 5'-phosphate synthase from Bacillus subtilis

L6 ANSWER 13 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI Gln-tRNA.sup.G.sup.l.sup.n formation from Glu-tRNA.sup.G.sup.l.sup.n requires cooperation of an asparaginase and a Glu-tRNA.sup.G.sup.l.sup.n kinase

L6 ANSWER 14 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI Analysis of the vitamin B6 biosynthesis pathway in the human malaria parasite Plasmodium falciparum

L6 ANSWER 15 OF 122 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 6
TI Characterization of LtsA from Rhodococcus erythropolis, an enzyme with glutamine amidotransferase activity

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TI Lid L11 of the glutamine amidotransferase domain of CTP synthase mediates allosteric GTP activation of glutaminase activity

L6 ANSWER 17 OF 122 PASCAL
on STN DUPLICATE 8
TIEN Characterization of salt-tolerant glutaminase from Stenotrophomonas maltophilia NYW-81 and its application in Japanese soy sauce fermentation

L6 ANSWER 18 OF 122 Elsevier BIOBASE
on STN
TI Structure-function studies on the iron-sulfur flavoenzyme glutamate synthase: An unexpectedly complex self-regulated enzyme

L6 ANSWER 19 OF 122 CAPLUS on STN
TI Fermentative production of L-glutamine by genetically modified Corynebacterium glutamicum

L6 ANSWER 20 OF 122 USPATFULL on STN
TI Method for producing L-glutamine and L-glutamine producing bacterium

L6 ANSWER 21 OF 122 USPATFULL on STN
TI Compounds for the modulation of the glycolysis enzyme and/or transaminase complex

L6 ANSWER 22 OF 122 USPATFULL on STN
TI Staphylococcus aureus polynucleotides and sequences

L6 ANSWER 23 OF 122 USPATFULL on STN
TI Molecular control of transgene segregation and its escape by a recoverable block of funtion (rbf) system

L6 ANSWER 24 OF 122 USPATFULL on STN
TI Nucleic acid and amino acid sequences relating to Streptococcus pneumoniae for diagnostics and therapeutics

L6 ANSWER 25 OF 122 Elsevier BIOBASE
on STN DUPLICATE
TI Domain organization of Salmonella typhimurium formylglycinamide ribonucleotide amidotransferase revealed by X-ray crystallography

L6 ANSWER 26 OF 122 Elsevier BIOBASE
on STN DUPLICATE
TI Long-range allosteric transitions in carbamoyl phosphate synthetase

L6 ANSWER 27 OF 122 Elsevier BIOBASE
on STN DUPLICATE
TI Characterization of the products of the genes SNO1 and SNZ1 involved in pyridoxine synthesis in Saccharomyces cerevisiae

L6 ANSWER 28 OF 122 Elsevier BIOBASE
on STN
TI Molecular cloning, overexpression, and purification of Micrococcus luteus K-3-type glutaminase from Aspergillus oryzae RIB40

L6 ANSWER 29 OF 122 Elsevier BIOBASE
on STN DUPLICATE
TI Inhibition of E. coli CTP synthase by the "positive" allosteric effector GTP

L6 ANSWER 30 OF 122 Elsevier BIOBASE
on STN
TI Regulation of transcription and activity of Rhizobium etli glutaminase a

L6 ANSWER 31 OF 122 USPATFULL on STN
TI Microbial culture with enhanced glutaminase activity and utilization thereof

L6 ANSWER 32 OF 122 USPATFULL on STN
TI Identification of modulatory molecules using inducible promoters

L6 ANSWER 33 OF 122 USPATFULL on STN
TI Flea head, nerve cord, hindgut and malpighian tubule nucleic acid molecules, proteins and uses thereof

L6 ANSWER 34 OF 122 USPATFULL on STN
TI STAPHYLOCOCCUS AUREUS POLYNUCLEOTIDES AND SEQUENCES

L6 ANSWER 35 OF 122 USPATFULL on STN
TI Nucleic acid and amino acid sequences relating to Enterococcus faecalis for diagnostics and therapeutics

L6 ANSWER 36 OF 122 USPATFULL on STN
TI Staphylococcus aureus polynucleotides and sequences

L6 ANSWER 37 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI Gain of glutaminase function in mutants of the ammonia-specific frog carbamoyl phosphate synthetase

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TIEN Functional characterization of a salt- and thermotolerant glutaminase from Lactobacillus rhamnosus

L6 ANSWER 39 OF 122 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED. on STN DUPLICATE 15
TIEN Microbial glutaminase: biochemistry, molecular approaches and applications in the food industry
Enzyme biochemistry and biotechnology. A collection of papers dedicated to Professor Dr. Kenji Soda in honor of his 70th birthday

L6 ANSWER 40 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN
TI Revisiting the steady state kinetic mechanism of glutamine-dependent asparagine synthetase from Escherichia coli

L6 ANSWER 41 OF 122 USPATFULL on STN
TI Utilization of Wolinella succinogenes asparaginase to treat diseases associated with asparagine dependence

L6 ANSWER 42 OF 122 USPATFULL on STN
TI STREPTOCOCCUS PNEUMONIAE POLYNUCLEOTIDES AND SEQUENCES

L6 ANSWER 43 OF 122 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 16
TI Steady-state kinetics of the glutaminase reaction of CTP synthase from Lactococcus lactis. The role of the allosteric activator GTP in coupling between glutamine hydrolysis and CTP synthesis

L6 ANSWER 44 OF 122 USPATFULL on STN
TI Utilization of Wolinella succinogenes asparaginase to treat diseases associated with asparagine dependence

L6 ANSWER 45 OF 122 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI A Novel Carbamoyl-Phosphate Synthetase from Aquifex aeolicus

L6 ANSWER 46 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI Imidazole glycerol phosphate synthase from Thermotoga maritima. Quaternary structure, steady-state kinetics, and reaction mechanism of the bienzyme complex

L6 ANSWER 47 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI Structural basis for the activity and substrate specificity of Erwinia chrysanthemi L-asparaginase

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TI Protein-glutaminase from Chryseobacterium proteolyticum, an enzyme that deamidates glutaminyl residues in proteins: Purification, characterization and gene cloning

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TI Mechanism for acivicin inactivation of triad glutamine amidotransferases

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TI Characterization of Glutaminase from Triticale

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TIEN Carbamoyl-phosphate synthetases (CPS) in lactic acid bacteria and other Gram-positive bacteria
TIFR Les bacteries lactiques : du cognitif a l'application

L6 ANSWER 52 OF 122 USPATFULL on STN
TI Methods for therapy of cancer

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TI Temperature-dependent function of the glutamine phosphoribosylpyrophosphate amidotransferase ammonia channel and coupling with glycinamide ribonucleotide synthetase in a hyperthermophile

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TI An engineered blockage within the ammonia tunnel of carbamoyl phosphate synthetase prevents the use of glutamine as a substrate but not ammonia

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TI Expression and purification of imidazole glycerol phosphate synthase from Saccharomyces cerevisiae

L6 ANSWER 56 OF 122 USPATFULL on STN
TI Pharmaceutical and diet formulations for the prophylaxis and treatment of gastrointestinal disorders

L6 ANSWER 57 OF 122 USPATFULL on STN
TI Compositions and methods for treating and preventing pathologies including cancer

L6 ANSWER 58 OF 122 USPATFULL on STN
TI Compositions and methods for therapy and prevention of cancer, AIDS, and anemia

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TI Functional linkage between the glutaminase and synthetase domains of carbamoyl-phosphate synthetase - Role of serine 44 in carbamoyl-phosphate synthetase-aspartate carbamoyltransferase-dihydroorotase (CAD)

L6 ANSWER 60 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI Deconstruction of the catalytic array within the amidotransferase subunit of carbamoyl phosphate synthetase

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TI Poly(ethylene glycol)-bovine serum albumin hydrogel as a matrix for enzyme immobilization. In vitro biochemical characterization

L6 ANSWER 62 OF 122 USPATFULL on STN
TI Compositions and methods for treating and preventing pathologies including cancer

L6 ANSWER 63 OF 122 USPATFULL on STN
TI Aptamers specific for biomolecules and methods of making

L6 ANSWER 64 OF 122 USPATFULL on STN
TI Methods of inducing the production of hemoglobin and treating pathologies associated with abnormal hemoglobin activity using phemylacetic acids and derivatives therof

L6 ANSWER 65 OF 122 USPATFULL on STN
TI Compositions and methods for therapy and prevention of pathologies including cancer, AIDS, and anemia

L6 ANSWER 66 OF 122 USPATFULL on STN
TI Methods for promoting wound healing

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TI The recombinant α subunit of glutamate synthase: Spectroscopic and catalytic properties

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TI Carbamoyl-phosphate synthetase II in kinetoplastids

L6 ANSWER 69 OF 122 USPATFULL on STN
TI Method of stabilizing enzyme conjugates

L6 ANSWER 70 OF 122 USPATFULL on STN
TI Methods for treating neoplastic conditions using phenylacetic acid and derivatives thereof

L6 ANSWER 71 OF 122 USPATFULL on STN
TI Methods for prevention of cancer using phenylacetic acids and derivatives thereof

L6 ANSWER 72 OF 122 USPATFULL on STN
TI Methods for inducing differentiation of a cell using phenyacetic acid and derivatives

L6 ANSWER 73 OF 122 USPATFULL on STN
TI Compositions and methods for therapy and prevention of pathologies including cancer, AIDS and anemia

L6 ANSWER 74 OF 122 USPATFULL on STN
TI Compositions and methods for treating and preventing pathologies including cancer

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TI The smallest carbamoyl-phosphate synthetase. A single catalytic subdomain catalyzes all three partial reactions

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TI Activation by fusion of the glutaminase and synthetase subunits of Escherichia coli carbamyl-phosphate synthetase

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TI Trapping an activated conformation of mammalian carbamyl-phosphate synthetase

L6 ANSWER 78 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI Catalytic activity of the N-terminal domain of Escherichia coli asparagine synthetase B can be reengineered by single-point mutation

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TI Low glutamine concentrations induce phenotypical and functional differentiation of U937 myelomonocytic cells

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TI In vivo mutational analysis of highly conserved amino acid residues of the small subunit Cpalp of the Carbamylphosphate synthetase of Saccharomyces cerevisiae

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TIEN The use of glutamine in the treatment of gastrointestinal disorders in man

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TI Structure and function of the glutamine phosphoribosylpyrophosphate amidotransferase glutamine site and communication with the phosphoribosylpyrophosphate site

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TI Probing the mechanism of nitrogen transfer in Escherichia coli asparagine synthetase by using heavy atom isotope effects

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TIEN The role of glutaminase in Rhizobium etli : studies with a new mutant

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TI SUBSTRUCTURE OF THE AMIDOTRANSFERASE DOMAIN OF MAMMALIAN CARBAMYL-PHOSPHATE SYNTHETASE

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TIEN Effect of germfree state on the capacities of isolated rat colonocytes to metabolize n-butyrate, glucose, and glutamine

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TIEN Role of the glutamine transaminase-ω-amidase pathway and glutaminase in glutamine degradation in Rhizobium etli

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TI Mapping the structural domains of E. coli carbamoyl phosphate synthetase using limited proteolysis

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TI Structural characterization of Pseudomonas 7A glutaminase-asparaginase

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TIEN Cloning, expression, and functional interactions of the amidotransferase domain of mammalian CAD carbamyl phosphate synthetase

L6 ANSWER 91 OF 122 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED. on STN DUPLICATE 40
TIEN Glutamine-dependent nitrogen transfer in Escherichia coli asparagine synthetase B : searching for the catalytic triad

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TI A molecular wedge for triggering the amidotransferase activity of carbamoyl phosphate synthetase

L6 ANSWER 93 OF 122 USPATFULL on STN
TI Conjugates of monophenyl thyroid analogs useful in assays

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TI Imidazole glycerol phosphate synthase: The glutamine amidotransferase in histidine biosynthesis.

L6 ANSWER 95 OF 122 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 41
TI Substitution of Glu841 by lysine in the carbamate domain of carbamyl phosphate synthetase alters the catalytic properties of the glutaminase subunit

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TIEN Endotoxin stimulates lymphocytes glutaminase expression

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TI A novel method of production of theanine by immobilized Pseudomonas nitroreducens cells

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TIEN A continuous production method for theanine by immobilized Pseudomonas nitroreducens cells

L6 ANSWER 99 OF 122 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED. on STN DUPLICATE 44
TIEN Dexamethasone stimulation of glutaminase expression in mesenteric lymph nodes. Discussion

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TIEN Extracellular L-glutaminase production by marine bacteria

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TIEN Detection of an enzyme bound γ-glutamyl acyl ester of carbamyl phosphate synthetase of Escherichia coli

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TI Mechanistic studies of glutaminase activity of a glutamine amidotransferase, carbamoyl phosphate synthetase from Escherichia coli

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TI Role of the four conserved histidine residues in the amidotransferase domain of carbamoyl phosphate synthetase

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TI The catalytic mechanism of the amidotransferase domain of the syrian hamster multifunctional protein CAD: Evidence for a CAD-glutamyl covalent intermediate in the formation of carbamyl phosphate

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TI ENDOTOXIN AND RENAL GLUTAMINE METABOLISM.

L6 ANSWER 106 OF 122 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN
TI Mammalian carbamyl phosphate synthetase (CPS). cDNA sequence and evolution of the CPS domain of the Syrian hamster multifunctional protein CAD

L6 ANSWER 107 OF 122 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI Escherichia coli carbamoyl phosphate-synthetase: Domains of glutaminase and synthetase-subunit interaction

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TI Formylglycinamide ribonucleotide synthetase from Escherichia coli: Cloning, sequencing, overproduction, isolation, and characterization

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TI Formation of gamma -glutamyl peptides by glutaminase of Aspergillus oryzae .

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TIEN A mathematical model for the growth of a single cell of E. coli on a glucose/glutamine/ammonium medium

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TIEN L-asparaginase effects on inhibition of protein synthesis and lowering of the glutamine content in cultured rat hepatocytes

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TI The gene coding for carbamoyl-phosphate synthetase I was formed by fusion of an ancestral glutaminase gene and a synthetase gene

L6 ANSWER 113 OF 122 CAPLUS COPYRIGHT 2006 ACS on STN
TI L-Glutamine and L-glutamate. UV-method with glutaminase and glutamate dehydrogenase

L6 ANSWER 114 OF 122 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
TI Inhibition of glucosamine-6-phosphate synthetase from bacteria by anticapsin

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TI Characterization of the effects of asparaginase from Escherichia coli and a glutaminase-free asparaginase from vibrio Succinogenes on specific cell-mediated cytotoxicity

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TI MECHANISM OF SENSITIVITY OF CULTURED PANCREATIC CARCINOMA TO ASPARAGINASE.

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TI 'Regulation of glutaminase B in Escherichia coli. III. Control by nucleotides and divalent cations.

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TI PROPERTIES OF ANTHRANILATE SYNTHETASE COMPONENT II FROM PSEUDOMONAS-PUTIDA.

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TI Inhibition by dithiothreitol of the utilization of glutamine by carbamyl phosphate synthetase. Evidence for formation of hydrogen peroxide

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TI Adenosine 3',5'-cyclic monophosphate control of the enzymes of glutamine metabolism in Escherichia coli

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TI ANTI NEOPLASTIC ACTIVITY OF CERTAIN BACTERIAL ENZYME PREPARATIONS.

L6 ANSWER 122 OF 122 CAPLUS COPYRIGHT 2006 ACS on STN
TI Bacterial production of glutamic acid in stored comminuted beef

=> d ibib abs l6 8 15 19 20 28 31 39 59 67 95 102 112 122

L6 ANSWER 8 OF 122 USPATFULL on STN
ACCESSION NUMBER: 2005:299042 USPATFULL
TITLE: Corynebacterium glutamicum genes encoding metabolic pathway proteins
INVENTOR(S): Pompejus, Markus, Freinsheim, GERMANY, FEDERAL REPUBLIC OF
Kroger, Burkhard, Limburgerhof, GERMANY, FEDERAL REPUBLIC OF
Schroder, Hartwig, Nussloch, GERMANY, FEDERAL REPUBLIC OF
Zelder, Oskar, Speyer, GERMANY, FEDERAL REPUBLIC OF
Haberhauer, Gregor, Limburgerhof, GERMANY, FEDERAL REPUBLIC OF
PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Ludwigshafen, GERMANY, FEDERAL REPUBLIC OF (non-U.S. corporation)

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2005260707	A1	20051124	
APPLICATION INFO.:	US 2005-55822	A1	20050211	(11)

RELATED APPLN. INFO.: Continuation of Ser. No. US 2000-606740, filed on 23 Jun 2000, ABANDONED

	NUMBER	DATE
PRIORITY INFORMATION:	DE 1999-19932125	19990709
	DE 1999-19932227	19990709
	DE 1999-19932228	19990709
	DE 1999-19932230	19990709
	DE 1999-19933005	19990714
	DE 1999-19933006	19990714
	DE 1999-19940764	19990827
	DE 1999-19940766	19990827
	DE 1999-19940832	19990827
	DE 1999-19941378	19990831
	DE 1999-19941379	19990831
	DE 1999-19942077	19990903
	DE 1999-19942079	19990903
	DE 1999-19931418	19990708
	DE 1999-19932126	19990709
	DE 1999-19932229	19990709
	DE 1999-19941396	19990831
	DE 1999-19942087	19990903

DE 1999-19930476   19990701
DE 1999-19931419   19990708
DE 1999-19931420   19990708
DE 1999-19932206   19990709
DE 1999-19942088   19990903
DE 1999-19942124   19990903
DE 1999-19932928   19990714
DE 1999-19931415   19990708
DE 1999-19931424   19990708
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DE 1999-19942076   19990903
DE 1999-19942086   19990903
DE 1999-19942095   19990903
DE 1999-19942129   19990903
US 1999-141031P   19990625 (60)
US 1999-142101P   19990702 (60)
US 1999-148613P   19990812 (60)
US 2000-187970P   20000309 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: LAHIVE & COCKFIELD, LLP., 28 STATE STREET, BOSTON, MA, 02109, US
NUMBER OF CLAIMS: 38
EXEMPLARY CLAIM: 1
LINE COUNT: 8777
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Isolated nucleic acid molecules, designated MP nucleic acid molecules, which encode novel MP proteins from Corynebacterium glutamicum are described. The invention also provides antisense nucleic acid molecules, recombinant expression vectors containing MP nucleic acid molecules, and host cells into which the expression vectors have been introduced. The invention still further provides isolated MP proteins, mutated MP proteins, fusion proteins, antigenic peptides and methods for the improvement of production of a desired compound from C. glutamicum based on genetic engineering of MP genes in this organism.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

ACCESSION NUMBER: 2005:330029 CAPLUS
DOCUMENT NUMBER: 143:22102
TITLE: Characterization of LtsA from Rhodococcus erythropolis, an enzyme with glutamine

amidotransferase activity
AUTHOR(S): Mitani, Yasuo; Meng, Xian Ying; Kamagata, Yoichi; Tamura, Tomohiro
CORPORATE SOURCE: Proteolysis and Protein Turnover Research Group, Research Institute of Genome-Based Biofactory, National Institute of Advanced Industrial Science and Technology (AIST), Toyohira-ku, Japan
SOURCE: Journal of Bacteriology (2005), 187(8), 2582-2591
CODEN: JOBAAY; ISSN: 0021-9193
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The nocardioform actinomycete Rhodococcus erythropolis has a characteristic cell wall structure. The cell wall is composed of arabinogalactan and mycolic acid and is highly resistant to the cell wall-lytic activity of lysozyme (muramidase). In order to improve the isolation of recombinant proteins from R. erythropolis host cells (N. Nakashima and T. Tamura, Biotechnol. Bioeng. 86:136-148, 2004), we isolated two mutants, L-65 and L-88, which are susceptible to lysozyme treatment. The lysozyme sensitivity of the mutants was complemented by expression of Corynebacterium glutamicum ltsA, which codes for an enzyme with glutamine amidotransferase activity that results from coupling of two reactions (a glutaminase activity and a synthetase activity). The lysozyme sensitivity of the mutants was also complemented by ltsA homologs from Bacillus subtilis and Mycobacterium tuberculosis, but the homologs from Streptomyces coelicolor and Escherichia coli did not complement the sensitivity. This result suggests that only certain LtsA homologs can confer lysozyme resistance. Wild-type recombinant LtsA from R. erythropolis showed glutaminase activity, but the LtsA enzymes from the L-88 and L-65 mutants displayed drastically reduced activity. Interestingly, an ltsA disruptant mutant, which expressed the mutated LtsA, changed from lysozyme sensitive to lysozyme resistant when NH_4Cl was added into the culture media. The glutaminase activity of the LtsA mutants inactivated by site-directed mutagenesis was also restored by addition of NH_4Cl, indicating that NH_3 can be used as an amide donor mol. Taken together, these results suggest that LtsA is critically involved in mediating lysozyme resistance in R. erythropolis cells.

REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 19 OF 122 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:446945 CAPLUS
DOCUMENT NUMBER: 141:5878
TITLE: Fermentative production of L-glutamine by genetically modified Corynebacterium glutamicum
INVENTOR(S): Nakamura, Jun; Akiyama, Kayo
PATENT ASSIGNEE(S): Ajinomoto Co., Inc., Japan
SOURCE: Eur. Pat. Appl., 37 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
EP 1424397	A1	20040602	EP 2003-26890		20031124
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
US 2004152175	A1	20040805	US 2003-720177		20031125
BR 2003005314	A	20040831	BR 2003-5314		20031125
CN 1502689	A	20040609	CN 2003-10124084		20031126
JP 2004187684	A2	20040708	JP 2003-395175		20031126
PRIORITY APPLN. INFO.:			JP 2002-342287	A	20021126

AB L-Glutamine is produced by culturing a coryneform bacterium having L-glutamine- producing ability and modified so that intracellular glutaminase activity is reduced, and preferably also modified so that intracellular glutamine synthetase activity is enhanced. The method of production includes culturing the bacterium in a medium, followed by accumulation of L-glutamine in the medium and collecting the L-glutamine from the medium.

L6 ANSWER 20 OF 122 USPATFULL on STN

ACCESSION NUMBER: 2004:196870 USPATFULL
TITLE: Method for producing L-glutamine and L-glutamine producing bacterium
INVENTOR(S): Nakamura, Jun, Kawasaki-shi, JAPAN
Akiyama, Kayo, Kawasaki-shi, JAPAN

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2004152175	A1	20040805	
APPLICATION INFO.:	US 2003-720177	A1	20031125	(10)

	NUMBER	DATE
PRIORITY INFORMATION:	JP 2002-342287	20021126

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: AJINOMOTO CORPORATE SERVICES, LLC, INTELLECTUAL PROPERTY DEPARTMENT, 1120 CONNECTICUT AVE., N.W., WASHINGTON, DC, 20036
NUMBER OF CLAIMS: 11
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Page(s)
LINE COUNT: 1523
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB L-glutamine is produced by culturing a coryneform bacterium having L-glutamine-producing ability and modified so that intracellular glutaminase activity is reduced, and preferably also modified so that intracellular glutamine synthetase activity is enhanced. The method of production includes culturing the bacterium in a medium, followed by accumulation of L-glutamine in the medium and collecting the L-glutamine from the medium.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 28 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN

ACCESSION NUMBER: 2004296125 ESBIOBASE
TITLE: Molecular cloning, overexpression, and purification of Micrococcus luteus K-3-type glutaminase from Aspergillus oryzae RIB40
AUTHOR: Masuo N.; Ito K.; Yoshimune K.; Hoshino M.; Matsushima K.; Koyama Y.; Moriguchi M.
CORPORATE SOURCE: E-mail: mmorigu@cc.oita-u.ac.jp
SOURCE: Protein Expression and Purification, (2004), 38/2 (272-278), 24 reference(s)
CODEN: PEXPEJ ISSN: 1046-5928
PUBLISHER ITEM IDENT.: S1046592804003080
DOCUMENT TYPE: Journal; Article
COUNTRY: United States
LANGUAGE: English
SUMMARY LANGUAGE: English

AB We have for the first time found and cloned the cDNA (AoglsA) of Aspergillus oryzae RIB40, which encodes a 49.9-kDa protein sharing 40% homology with the salt-tolerant glutaminase of Micrococcus

luteus K-3 (Micrococcus glutaminase). AoglsA was subcloned into a series of expression vectors and expressed in Saccharomyces cerevisiae and Escherichia coli. The gene product, which we named AoGls, showed glutaminase activity and was produced in a cell wall fraction of S. cerevisiae and a soluble protein in E. coli. The highest expression level of 186 U/mg was obtained when the AoglsA was inserted into six bases downstream of the Shine-Dalgarno (SD) sequence of pKK223-3 and expressed in E. coli Rosetta (DE3). AoGls was purified by SuperQ-TOYOPEARL, glutamine affinity chromatography, and Butyl-TOYOPEARL. This is the first report on the overexpression and purification of a M. luteus K-3-type glutaminase cloned from an eucaryote.

L6 ANSWER 31 OF 122 USPATFULL on STN

ACCESSION NUMBER:	2003:180816 USPATFULL
TITLE:	Microbial culture with enhanced glutaminase activity and utilization thereof
INVENTOR(S):	Yuasa, Ari, Kawasaki-shi, JAPAN Okamura, Hideki, Kawasaki-shi, JAPAN Kataoka, Jiro, Kawasaki-shi, JAPAN
PATENT ASSIGNEE(S):	AJINOMOTO CO. INC., Tokyo, JAPAN (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003124646	A1	20030703
APPLICATION INFO.:	US 2002-285642	A1	20021101 (10)

RELATED APPLN. INFO.: Continuation of Ser. No. US 2000-647923, filed on 7 Dec 2000, ABANDONED A 371 of International Ser. No. WO 1999-JP1983, filed on 14 Apr 1999, UNKNOWN

	NUMBER	DATE
PRIORITY INFORMATION:	JP 1998-121621	19980416

DOCUMENT TYPE:	Utility
FILE SEGMENT:	APPLICATION
LEGAL REPRESENTATIVE:	OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C., 1940 DUKE STREET, ALEXANDRIA, VA, 22314
NUMBER OF CLAIMS:	8
EXEMPLARY CLAIM:	1
LINE COUNT:	720

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A microbial culture having an increased glutaminase activity is produced by releasing catabolite repression of said glutaminase during incubation of a microorganism capable of producing glutaminase, and feeding a nitrogen source in the intermediate stage of the incubation as required.

Protein is subjected to a reaction with the thus prepared microbial culture in the presence of proteolytic enzymes and either in the absence of sodium chloride or in the presence of sodium chloride at a concentration of 3% (weight/volume) or less, thereby giving hydrolyzed protein which has a potent flavoring effect and is highly useful as a food seasoning.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 39 OF 122 PASCAL COPYRIGHT 2006 INIST-CNRS. ALL RIGHTS RESERVED. on STN DUPLICATE 15

ACCESSION NUMBER:	2004-0026662 PASCAL
COPYRIGHT NOTICE:	Copyright .COPYRGT. 2004 INIST-CNRS. All rights reserved.
TITLE (IN ENGLISH):	Microbial glutaminase: biochemistry, molecular approaches and applications in the food industry Enzyme biochemistry and biotechnology. A collection of papers dedicated to Professor Dr. Kenji Soda in honor

of his 70th birthday

AUTHOR: NANDAKUMAR Renu; YOSHIMUNE Kazuaki; WAKAYAMA Mamoru; MORIGUCHI Mitsuaki
NAKAJIMA Nobuyoshi (ed.)

CORPORATE SOURCE: Department of Chemical and Biochemical Engineering, University of Maryland Baltimore County, 1000 Hilltop Circle, Baltimore, MD 21250, United States; Department of Applied Chemistry, Faculty of Engineering, Oita University, Dannoharu 700, Oita 870-1192, Japan; Department of Bioscience and Biotechnology, Faculty of Science and Engineering, Ritsumeikan University, Noji, Kusatsu, Shiga 525-8577, Japan
Department of Nutritional Science, Faculty of Health and Welfare Science, Okayama Prefectural University, Soja, 719-1197 Okayama, Japan

SOURCE: Journal of molecular catalysis. B, Enzymatic, (2003), 23(2-6), 87-100, 77 refs.
ISSN: 1381-1177
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: Netherlands
LANGUAGE: English
AVAILABILITY: INIST-17107B, 354000112883890030
AN 2004-0026662 PASCAL

AB Glutaminase is widely distributed in microorganisms including bacteria, yeast and fungi. The enzyme mainly catalyzes the hydrolysis of γ-amido bond of L- glutamine. In addition, some enzymes also catalyze γ-glutamyl transfer reaction. A highly savory amino acid, L-glutamic acid and a taste-enhancing amino acid of infused green tea, theanine can be synthesized by employing hydrolytic or transfer reaction catalyzed by glutaminase. Therefore, glutaminase is one of the most important flavor-enhancing enzymes in food industries. In this review, subsequent to a discussion on the definition of glutaminase, the enzymatic properties, applications of glutaminase in the food industry, and occurrence and distribution of the enzyme are described. We then illustrate the gene cloning, primary structure, and 3D-structure of glutaminase. Finally, to facilitate the future applications of glutaminase in food fermentations, the mechanisms of action of salt-tolerant glutaminase are briefly discussed.

L6 ANSWER 59 OF 122 SCISEARCH COPYRIGHT (c) 2006 The Thomson Corporation on STN DUPLICATE 24

ACCESSION NUMBER: 1999:759192 SCISEARCH
THE GENUINE ARTICLE: 241ZA
TITLE: Functional linkage between the glutaminase and synthetase domains of carbamoyl-phosphate synthetase - Role of serine 44 in carbamoyl-phosphate synthetase-aspartate carbamoyltransferase-dihydroorotase (CAD)

AUTHOR: Hewagama A; Guy H I; Vickrey J F; Evans D R (Reprint)
CORPORATE SOURCE: Wayne State Univ, Sch Med, Dept Biochem & Mol Biol, Detroit, MI 48201 USA (Reprint)
COUNTRY OF AUTHOR: USA

SOURCE: JOURNAL OF BIOLOGICAL CHEMISTRY, (1 OCT 1999) Vol. 274, No. 40, pp. 28240-28245.
ISSN: 0021-9258.
PUBLISHER: AMER SOC BIOCHEMISTRY MOLECULAR BIOLOGY INC, 9650 ROCKVILLE PIKE, BETHESDA, MD 20814 USA.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 50
ENTRY DATE: Entered STN: 1999
Last Updated on STN: 1999

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Mammalian carbamoyl-phosphate synthetase is part of carbamoyl-phosphate synthetase-aspartate carbamoyltransferase-dihydroorotase (CAD), a multifunctional protein that also catalyzes the second and third steps of pyrimidine biosynthesis. Carbamoyl phosphate synthesis requires the concerted action of the glutaminase (GLN) and carbamoyl-phosphate synthetase domains of CAD. There is a functional linkage between these domains such that glutamine hydrolysis on the GLN domain does not occur at a significant rate unless ATP and HCO3-, the other substrates needed for carbamoyl phosphate synthesis, bind to the synthetase domain. The GLN domain consists of catalytic and attenuation subdomains, In the separately cloned GLN domain, the catalytic subdomain is down-regulated by interactions with the attenuation domain, a process thought to be part of the functional linkage. Replacement of Ser(44) in the GLN attenuation domain with alanine increases the k(cat)/K-m for glutamine hydrolysis 680-fold. The formation of a functional hybrid between the mammalian Ser(44) GLN domain and the Escherichia coli carbamoyl-phosphate synthetase large subunit had little effect on glutamine hydrolysis, In contrast, ATP and HCO3- did not stimulate the glutaminase activity, indicating that the interdomain linkage had been disrupted. In accord with this interpretation, the rate of glutamine hydrolysis and carbamoyl phosphate synthesis were no longer coordinated. Approximately 3 times more glutamine was hydrolyzed by the Ser(44) --> Ala mutant than that needed for carbamoyl phosphate synthesis. Ser(44), the only attenuation subdomain residue that extends into the GLN active site, appears to be an integral component of the regulatory circuit that phases glutamine hydrolysis and carbamoyl phosphate synthesis.

L6 ANSWER 67 OF 122 Elsevier BIOBASE COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE

ACCESSION NUMBER: 1998047215 ESBIOBASE

TITLE: The recombinant α subunit of glutamate synthase: Spectroscopic and catalytic properties

AUTHOR: Vanoni M.A.; Fischer F.; Ravasio S.; Verzotti E.; Edmondson D.E.; Hagen W.R.; Zanetti G.; Curti B.

CORPORATE SOURCE: M.A. Vanoni, Dipto. di Fisiol./Biochim. Generali, Universita degli Studi di Milano, Via Celoria 26, 20133 Milano, Italy.
E-mail: mav@imiucca.csi.unimi.it

SOURCE: Biochemistry, (17 FEB 1998), 37/7 (1828-1838), 28 reference(s)
CODEN: BICHAW ISSN: 0006-2960

DOCUMENT TYPE: Journal; Article
COUNTRY: United States
LANGUAGE: English
SUMMARY LANGUAGE: English

AB As part of our studies of Azospirillum brasilense glutamate synthase, a complex iron-sulfur flavoprotein, we have overproduced the two enzyme subunits separately in Escherichia coli. The β subunit (53.2 kDa) was demonstrated to contain the site of NADPH oxidation of glutamate synthase and the FAD cofactor, which was identified as Flavin 1 of glutamate synthase, the flavin located at the site of NADPH oxidation. We now report the overproduction of the glutamate synthase α subunit (162 kDa), which is purified to homogeneity in a stable form. This subunit contains FMN as the ravin cofactor which exhibits the properties of Flavin 2 of glutamate synthase: reactivity with sulfite to yield a flavin-N(5)-sulfite addition product (K(d) = 2.6 ± 0.22 mM), lack of reactivity with NADPH, reduction by L-glutamate, and reoxidation by 2-oxoglutarate and glutamine. Thus, FMN is the ravin located at the site of reduction of the iminoglutarate formed on the addition of glutamine amide group to the C(2) carbon of 2-oxoglutarate. The glutamate synthase α subunit contains the 3Fe-4S cluster of glutamate synthase, as shown by low-temperature EPR spectroscopy experiments. The glutamate synthase α subunit catalyzes the synthesis of glutamate from L- glutamine

and 2-oxoglutarate, provided that a reducing system (dithionite and methyl viologen) is present. The FMN moiety but not the 3Fe-4S cluster of the subunit appears to participate in this reaction. Furthermore, the isolated α subunit of glutamate synthase exhibits a glutaminase activity, which is absent in the glutamate synthase holoenzyme. These findings support a model for glutamate synthase according to which the enzymes prepared from various sources share a common glutamate synthase function (the α subunit of the bacterial enzyme, or its homologous polypeptide forming the ferredoxin- dependent plant enzyme) but differ for the chosen electron donor. The pyridine nucleotide-dependent forms of the enzyme have recruited a FAD- dependent oxidoreductase (the bacterial β subunit) to mediate electron transfer from the NAD(P)H substrate to the glutamate synthase polypeptide. However, it appears that the presence of the enzyme β subunit and/or of the additional iron-sulfur clusters (Centers II and III) of the bacterial glutamate synthase is required for communication between Center I (the 3Fe- 4S center) and the FMN moiety within the α subunit, and for ensuring coupling of glutamine hydrolysis to the transfer of the released ammonia molecule to 2-oxoglutarate in the holoenzyme.

ACCESSION NUMBER: 1993:403879 CAPLUS
DOCUMENT NUMBER: 119:3879
TITLE: Substitution of Glu841 by lysine in the carbamate domain of carbamyl phosphate synthetase alters the catalytic properties of the glutaminase subunit
AUTHOR(S): Lusty, Carol J.; Liao, May
CORPORATE SOURCE: Dep. Mol. Genet., Public Health Res. Inst., New York, NY, 10016, USA
SOURCE: Biochemistry (1993), 32(5), 1278-84
CODEN: BICHAW; ISSN: 0006-2960
DOCUMENT TYPE: Journal
LANGUAGE: English
AB In previous studies a Glu841 → Lys replacement in the carbamate phosphorylating domain located in the COOH half of the synthetase subunit of Escherichia coli carbamyl phosphate synthetase was shown to reduce overall synthesis of carbamyl phosphate by 4 orders of magnitude with either glutamine or NH_3 as nitrogen donor (Guillou, F.; et al., 1992). In the present study, the mutant enzyme has been further analyzed for its glutamine hydrolytic activity. The glutaminase activity of the mutant enzyme has the following properties. (1) In the absence of other substrates the turnover number is only marginally different from that of the wild-type complex. (2) The Km for glutamine is 60 times higher than in wild-type complex and three times higher than in the separated glutaminase subunit. (3) In the present study wild-type carbamyl phosphate synthetase has been shown to catalyze glutamine hydrolysis by a mechanism involving an enzyme-bound acyl ester intermediate (γ-glutamyl thioester). This intermediate is formed and is hydrolyzed with rates consistent with overall glutamine hydrolysis. At physiol. concns. of glutamine (1.2 mM), the steady-state concentration of γ-glutamyl thioester is 0.3 mol/mol of wild-type enzyme. Under the same conditions, only 0.02 mol of thioester is measured in the mutant enzyme. Maximal accumulation of this covalent intermediate by the mutant enzyme required 10 times higher concns. of free glutamine. (4) The rate of reaction with 2-amino-4-oxo-5-chloropentanoate, a glutamine analog known to specifically alkylate an active site cysteine residue, is 2 orders of magnitude slower in the mutant. (5) Binding of both MgATP and bicarbonate to carbamylphosphate synthetase normally stimulates glutamine hydrolysis by 100-fold. This activation, presumed to be dependent on a carboxyphosphate-induced conformational change of the glutaminase active site, is not observed with the Lys841 enzyme. (6) Finally, the pH dependence of the glutaminase activity in the mutant complex is identical to that of the separated glutaminase subunit which exhibits fewer titratable groups than wild-type holoenzyme. Most of the properties listed above are also displayed by the

isolated glutaminase subunit. In addition to the previously reported effects on catalytic activity of the synthetase component, the Lys841 substitution therefore appears to uncouple functional interactions between the glutaminase and carbamate phosphorylation domains.

L6 ANSWER 102 OF 122 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1993:142405 CAPLUS
DOCUMENT NUMBER: 118:142405
TITLE: Mechanistic studies of glutaminase activity of a glutamine amidotransferase, carbamoyl phosphate synthetase from Escherichia coli
AUTHOR(S): Chang, Sun Hee Kim
CORPORATE SOURCE: Texas A and M Univ., College Station, TX, USA
SOURCE: (1991) 131 pp. Avail.: Univ. Microfilms Int., Order No. DA9206471
From: Diss. Abstr. Int. B 1992, 52(12, Pt. 1), 6361-2
DOCUMENT TYPE: Dissertation
LANGUAGE: English
AB Unavailable

L6 ANSWER 112 OF 122 BIOTECHNO COPYRIGHT 2006 Elsevier Science B.V. on STN DUPLICATE
ACCESSION NUMBER: 1985:15064463 BIOTECHNO
TITLE: The gene coding for carbamoyl-phosphate synthetase I was formed by fusion of an ancestral glutaminase gene and a synthetase gene
AUTHOR: Nyunoya H.; Broglie K.E.; Lusty C.J.
CORPORATE SOURCE: Molecular Genetics Laboratory, The Public Health Research Institute of The City of New York, Inc., New York, NY 10016, United States.
SOURCE: Proceedings of the National Academy of Sciences of the United States of America, (1985), 82/8 (2244-2246)
CODEN: PNASA6
DOCUMENT TYPE: Journal; Article
COUNTRY: United States
LANGUAGE: English
AN 1985:15064463 BIOTECHNO
AB A near full-length cDNA copy of rat carbamoyl-phosphate synthetase I (EC 6.3.4.16) mRNA has been cloned. The cDNA insert in the recombinant plasmid pHN234 is 5.3 kilobases long. Analysis of the sequence coding for carbamoyl-phosphate synthetase I indicates that the gene has arisen from a fusion of two ancestral genes: one homologous to Escherichia coli carA, coding for a glutaminase subunit, and the second homologous to the carB gene that codes for the synthetase subunit. A short amino acid sequence previously proposed to be part of the active site involved in glutamine amide nitrogen transfer in the E. coli and yeast carbamoyl-phosphate synthetases (EC 6.3.5.5) is also present in the rat enzyme. In the mammalian enzyme, however, the glutaminase domain lacks a cysteine residue previously shown to interact with glutamine. The cysteine is replaced by a serine residue. This substitution could, in part, account for the inability of mammalian carbamoyl-phosphate synthetase I to catalyze the hydrolysis of glutamine to glutamic acid and ammonia.

L6 ANSWER 122 OF 122 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1967:18107 CAPLUS
DOCUMENT NUMBER: 66:18107
TITLE: Bacterial production of glutamic acid in stored comminuted beef
AUTHOR(S): Gardner, G. A.; Stewart, David John
CORPORATE SOURCE: Queen's Univ., Belfast, Ire.
SOURCE: Journal of Applied Bacteriology (1966), 29(2), 365-74
CODEN: JABAA4; ISSN: 0021-8847

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DOCUMENT TYPE:           Journal
LANGUAGE:                English
AB    The production of free glutamic acid from the deamidation of
      glutamine in stored meat was due to bacterial activity
      and not to glutaminase in the meat.  Pseudomonas-Achromobacter
      species predominated after 41 hrs. at 15°.  The glutaminase of an
      isolated pseudomonad was optically active at 36° and pH 5, and was
      constitutive.


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      AQUASCI, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CAPLUS,
      CEABA-VTB, CIN, CONFSCI, CROPB, CROPU, DDFB, DDFU, DGENE, DISSABS, DRUGB,
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                  1   FILE ADISINSIGHT
                 59   FILE AGRICOLA
                 31   FILE ANABSTR
                  2   FILE ANTE
                  1   FILE AQUALINE
                 26   FILE AQUASCI
                 76   FILE BIOENG
               1287   FILE BIOSIS
                 87   FILE BIOTECHABS
                 87   FILE BIOTECHDS
                271   FILE BIOTECHNO
                163   FILE CABA
               1641   FILE CAPLUS
                 31   FILE CEABA-VTB
                  1   FILE CIN
                  8   FILE CONFSCI
                  6   FILE CROPU
                 78   FILE DDFB
                 49   FILE DDFU
                177   FILE DGENE
                 84   FILE DISSABS
                 78   FILE DRUGB
                 69   FILE DRUGU
                  3   FILE EMBAL
                904   FILE EMBASE
                298   FILE ESBIOBASE
                  1   FILE FOREGE
                 24   FILE FROSTI
                 47   FILE FSTA
                187   FILE GENBANK
                 30   FILE IFIPAT
                  1   FILE IMSDRUGNEWS
                  1   FILE IMSRESEARCH
                 41   FILE JICST-EPLUS
                270   FILE LIFESCI
               1133   FILE MEDLINE
                  5   FILE NTIS
                  7   FILE OCEAN
                370   FILE PASCAL
                  1   FILE PHIN
                  7   FILE PROMT
                  2   FILE RDISCLOSURE
                628   FILE SCISEARCH
                541   FILE TOXCENTER
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         301   FILE USPATFULL
          31   FILE USPAT2
           4   FILE WATER
          69   FILE WPIDS
          69   FILE WPINDEX
           6   FILE IPA
           1   FILE NAPRALERT
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                 OR COLI? OR BACTER? OR BREVIBACT?)
L3          1174 SEA L2 AND (METHOD? OR PRODUCT? OR SYNTHE?)
L4           342 SEA GLUTAMINAS?(S)(GLUTAMINE?)(S)(CORYNEFOR? OR GLUTAMICUM? OR
                 COLI? OR BACTER? OR BREVIBACT?)
L5           211 SEA L4(S)(METHOD? OR SYNTHE? OR PRODUCT?)
L6           122 DUP REM L5 (89 DUPLICATES REMOVED)
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FILE STNINDEX

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